

IN THE SPECIFICATION:

Change page 1, lines 6 to 12 to read:

The present invention relates to an undulated-wall honeycomb structure used as ~~a~~an internal combustion engine exhaust gas purification catalyst carrier or deodorizing catalyst carrier for vehicle exhaust gas and the like, as a filter for various types of filtering devices, as a heat exchanger unit, or as a chemical reactor carrier such as a modifying catalyst carrier for fuel cells or the like.

Change the paragraph bridging pages 6 and 7 to read:

Also, JP-A-52-119611 discloses deforming walls for the purpose of adjusting thermal stress or deformation due to mechanical stress on the plane perpendicular to the longitudinal direction of the cells (passage direction), but due to the same problem as with that in JP-A-5-123580, does not contribute to improved catalyst capabilities. Also, the description in JP-A-52-119611 that the amplitude of the wall deformation (sine wave) deformations ~~are~~is smaller than the wall thickness reduces stress focusing on the deformed portions of the walls, but does not agree with the aggressive increase of interaction between exhaust gas and the walls, with is the essence of the present invention.

Change page 16, lines 11 to 21 to read:

Fig. 25 is an explanatory diagram illustrating the Valley Level, which represents the degree of wall surface roughness of the honeycomb structure. Here, Valley Level refers to the percentage of the entire area of the walls which the sum of the surface area of the final hole 47 portion on the average face 43 occupies in the event that the partition surface is cut with the

average plane 43, wherein the average face 43 is a surface wherein the volume of protrusions and recessions on the surface have been found to be the same by analyzing wall surface roughness data measured two-dimensionally with a surface roughness meter. The diagram also shows benchmark 42, pour surface area at an average plane 44, and a conventional pour surface area 46.

Page 37, lines 12 to 22 to read:

Also, the systematic meandering of the line 6 of the apex portion of the protrusions and the line 7 of the low point of the recessions in a direction perpendicular to the cell passage direction is not restricted to the pattern shown in Fig. 13(a) wherein the directions of the line 6 of the apex portion of the protrusions and the line 7 of the low point of the recessions change with each cell passage, nor to the pattern in honeycomb structure 71 shown in Fig. 14 wherein the directions of the line 6 of the apex portion of the protrusions and the line 7 of the low point of the recessions change every two cell passages.

Change the paragraph bridging pages 40 and 41 to read:

Also, the black hole channel member 5354 serves to lead the material to the slits 55, and generally, the positioning is such that the intersecting portions of the walls of the honeycomb structure match the center of the back holes 53. The slit member 56 defines the form and structure of the honeycomb structure, and the material extruded from the slits form the walls.

Change page 54, lines 2 to 25 to read:

Fig. 18 (a) and (b) are explanatory diagrams showing an example of a positional arrangement for using the undulated-wall honeycomb structure according to the present

invention as an exhaust gas purification catalytic converter. As already described with reference to Fig. 5, the undulated-wall honeycomb structure according to the present invention can be suitably used as a vehicle exhaust gas purification catalyst carrier. Fig. 18(a) shows an exhaust gas purification catalytic converter system 97 wherein an undulated-wall honeycomb structure 18 is disposed at the exhaust upstream side at the front, and a flat-wall honeycomb structure 28 is disposed in mounting member 88 at the exhaust downstream side at the back, so as to serially link the two and store in a single converter. In this case, the undulated-wall honeycomb structure 18 has a so-called catalyst light-off function, wherein the catalyst is activated early on after starting the engine, raising the exhaust gas temperature, so as to activate the catalyst in the latter structure early on after starting the engine and purify the harmful components within the exhaust gas. The former is for lighting the catalyst, and accordingly the honeycomb structure 18 is preferably relatively small in capacity, thus allowing the length of the honeycomb structure 18 to be shortened, which lends to reducing pressure loss.

Change page 56, lines 6 to 18 to read:

As shown in Fig. 20(a), an exhaust gas purification catalytic converter system 90 is also proposed wherein the undulated-wall honeycomb structure 20 serving as a catalyst carrier is disposed at the front or upstream side, and a fine particle removing filter 30 which is an undulated-wall honeycomb structure is disposed at the back or downstream side. The filter disposed at the back or downstream side may use a normal honeycomb structure, which is not an undulated-wall structure. Of course, an alternative exhaust gas purification catalytic converter system 94 includes a design may be employed wherein the honeycomb structures are not stored

in separate metals cases 89 as shown in Fig. 20(a) but rather wherein the catalyst carrier and filter are stored in a single metal case 89 as shown in Fig. 20(b).

Change the paragraph bridging pages 58 and 59 to read:

Fig. 23 is an example of a polymer fuel cell system. With a fuel cell system, extracting hydrogen 72 at an early stage from fuel 58 such as methanol, natural gas, modified gasoline, etc. that has been transported to the modifier 67 of the fuel cell, sending the hydrogen 72 to the fuel cell stack 65, and effectively reacting the hydrogen 72 with oxygen at the fuel cell stack 65 to extract electricity, is necessary for the effectiveness of the modifier 63, and for improving the overall operating efficiency of the entire fuel cell system. The polymer fuel cell system also includes CO<sub>2</sub> remover 64, electric motor 66, heat 68, and air 70. Raising the temperature of the catalyst within the modifier 63 at an early point is important, this being the same operation as that of the exhaust gas purification catalyst, and using the undulated-wall honeycomb structure is effective for raising the efficiency of the modifier 63 and also enables the modifier 63 to be reduced in size. Conventionally, pellet catalyst was used for the modifier 63, but using the honeycomb structure allows modifying catalyst to be configured with low pressure loss, high surface area, and low thermal capacity, leading to further effectiveness by use of the undulated-wall honeycomb structure. Also, the fuel cell stack 65 generally uses a structure wherein carbon separators and solid polymer electrolytic film are laminated, to which a honeycomb structure can be applied, and using the undulated-wall honeycomb structure enables increasing efficiency and hence reduction in size. Use as a hydrogen-separating filter can also be conceived. With the present example, the structure of the modifier 63 is such that fuel 58 which has passed through a ~~de-sulfurizing~~ de-sulfurizing device 62 and water vapor pass through the catalyst using the

undulated-wall honeycomb structure. This is also true for mid-scale dispersion generation and Solid Oxide Fuel Cells (SOFC) used for large-scale generation.

Change page 66, lines 5 to 23 to read:

JASO Stipulation M505-87 stipulates that compressive strength is to be measured in each of the A-axial, B-axial, and C-axial direction for a square cell. The method for extracting a measurement sample is shown in Fig. 9. For the A-axial destructive strength, a cylindrical sample (A-axis sample 82) 25.4 mm in diameter and 25.4 mm in length is extracted from the honeycomb structure 81 so that the longitudinal direction of the cylindrical form is in the cell passage direction (the A axis), and the strength is the value obtained by dividing the destructive load compressing the A-axial sample in the cell passage direction by the area of the compression plane. In the same way, for the B-axial destructive strength, a sample (B-axis sample ~~82~~83) is taken in the B-axial direction perpendicular to the A axis following the walls and measured, and also, for the C-axial destructive strength, a same (C-axis sample ~~83~~84) is taken in the C-axial direction perpendicular to the A axis and rotated 45° on the cell passage cross-section from the B-axial direction, and measured.